H10857

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey Hydrographic/ Side Scan Sonar

Field No. AHP-5-1-99

Registry No. H10857

LOCALITY

State South Carolina

General Locality Cooper River

Locality Goose Creek to Red Bank Landing

1999

CHIEF OF PARTY
Brian A. Link

NOAA FORM 77-28 (10/72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-10857

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

AHP-5-01-99

State South Carolina

General locality Cooper River

Locality Goose Creek to Red Bank Landing

Scale 1:5,000 Date of survey Jan. 7, 1999 to Feb. 16, 1999

dated 3-19-97 Project No. OPR-G301-AHP

Vessel Launch 1210, Atlantic Hydrographic Party

Chief of party Brian A. Link

Surveyed by DBE, RWR, PMW

Soundings taken by echo sounder, hand lead, pole

by DBE, RWR, PMW

Graphic record checked by DBE, RWR, PMW

Protracted by HEWLETT PACKARD DESIGNJET 2500 PLOTTER Automated plot by ~~HPS/ HP 750C~~

Verification by ~~HSD~~ ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in METERS feet ✓ at MLLW MLLW ✓

REMARKS:

Change No. 1 dated April 9, 1998 & Change No. 2 dated August 18, 1998

DBE = David B. Elliott

RWR = Robert W. Ramsey

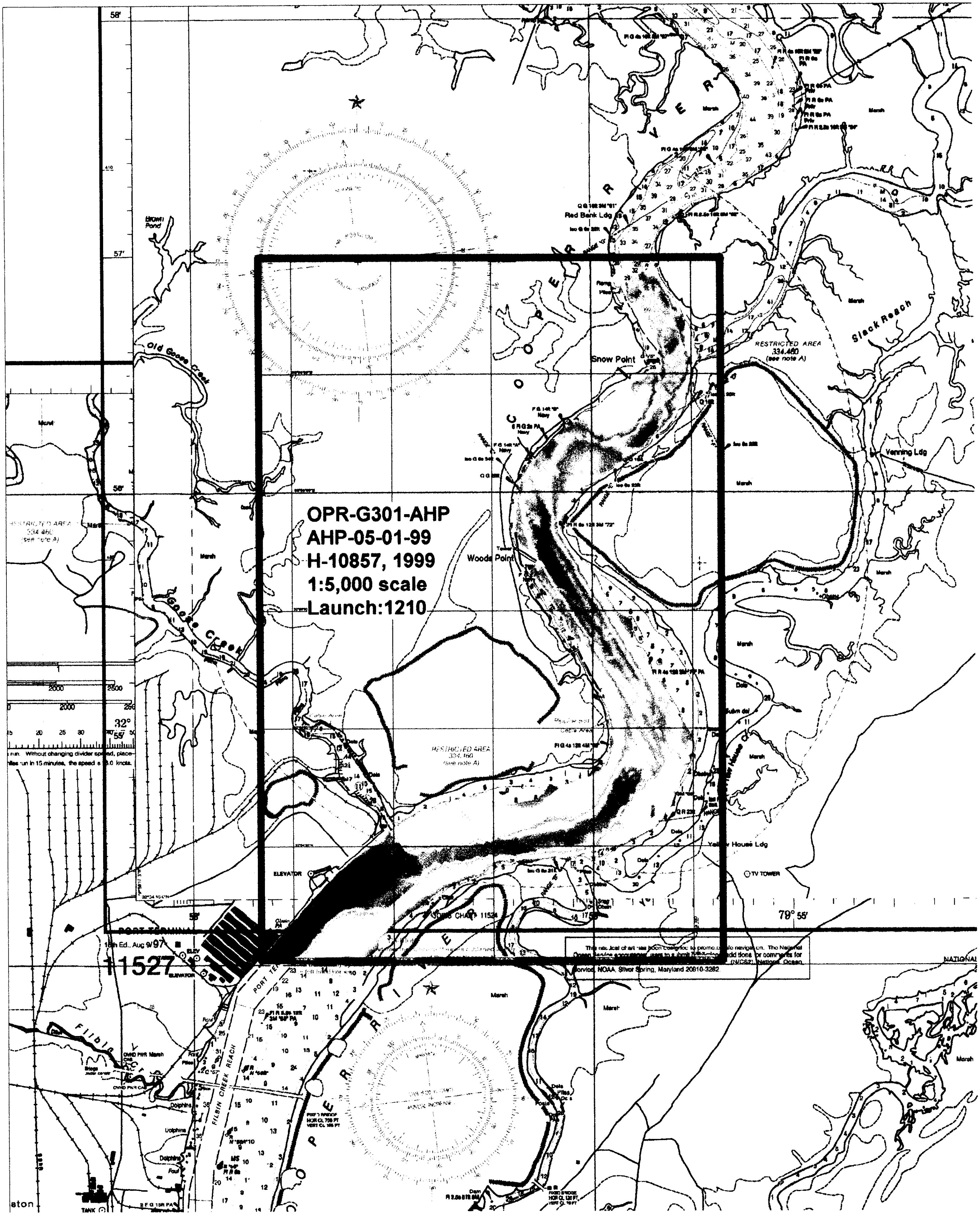
PMW = Philip M. Wolf

* HAND WRITTEN NOTES IN THE DESCRIPTIVE REPORT WERE MADE DURING OFFICE PROCESSING

AWOIS/SURFV 3/8/00 JJV

NOAA FORM 77-28 SUPERSEDES FORM C & GS-837.

INDEX OF SHEETS


OPR-G301-AHP
AHP-05-01-99
H-10857, 1999
1:5,000 scale
Launch:1210
Snow Point
Woods Point
Red Bank Ldg
Venning Ldg
Yellow House Ldg
Slack Reach
Old Goose Creek
Goose Creek
Filbin Creek
FILBIN CREEK REACH
RESTRICTED AREA
334.460
(see note A)
ELEVATOR
TV TOWER
Marsh
11527
15th Ed., Aug 9/97
79° 55'
32°
57'
58'
ston
TANK

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY, H-10857
OPR-G301-AHP
FIELD NO. AHP-5-1-99
SCALE: 1: 5,000
1999
ATLANTIC HYDROGRAPHIC PARTY TWO
CHIEF OF PARTY: Brian A. Link (acting)

A. PROJECT

This survey was conducted according to Hydrographic Project Instructions OPR-G301-AHP, Charleston Harbor, South Carolina and adjoining waterways, dated March 19, 1997 , Change No.1 dated April 9, 1998, and Change No. 2 dated August 18, 1998.

The purpose of project OPR-G301-AHP is to provide a navigable area survey with 200-percent side scan sonar coverage within the assigned area of the Cooper River, Goose Creek to Red Bank Landing, South Carolina, to the 12-foot contour, except as modified by the Project Instructions.

The survey is being conducted in response to a request from the Charleston Branch Pilots Association.

B. AREA SURVEYED

The area surveyed as specified by the Project Instructions is defined as Sheet "G." The approximate survey limits are:

North - 32°57'00"N
South - 32°54'00"N
East - 079°55'20"W
West - 079°57'42"W

This survey was conducted from January 7, 1999 (DN: 007) through February 16, 1999 (DN: 047).

C. SURVEY VESSEL

NOAA launch 1210, a 27-foot SeaArk, was used to collect all survey data. There were no unusual vessel configurations or problems encountered with the vessel.

D. AUTOMATED DATA ACQUISITION AND PROCESSING SEE ALSO THE EVALUATION REPORT

HYPACK version 7.1A was used for on-line data acquisition. HPS programs version 8.2, updated through May 29, 1998 and HP Tools version 1.72 were used for data processing. MapInfo Professional Version 5.0 and Vertical Mapper Version 1.5, were used to support processing and for plotting all survey data.. The NOS program VELOCITY (Ver. 3.0) was also used during this survey.

E. SONAR EQUIPMENT

An Edge Tech model 260-TH image correcting side scan sonar recorder (S/N 020417) with a model 272-TD towfish (S/N 020892), was used throughout this survey. The side scan sonar equipment was used to conduct dual beam surveying and investigate AWOIS items using NOAA launch 1210. The system frequency used was 100 kHz. The recorder was set on one of either 50/75/100/150-meter range scales. There were no water depths greater than 25 meters. The confidence checks were performed daily on existing buoys in the Charleston, SC channels at 100kHz.

A coverage of 200% was obtained in all the required survey areas and AWOIS items where water depth and/or hazards permitted. Side scan sonar coverage was conducted to the 12-foot depth curve and single beam reduced line spacing was performed in other areas where warranted. The towfish was deployed off the starboard quarter of the vessel, which proved very stable. Distorted images caused by strong tidal currents were seen periodically. All contacts and shadows were manually scaled and entered into a DPS contact table to determine the height off the bottom. The significant contacts were then compared by position, as well as common depth and relationship to channels to determine if diver investigations were needed. A total of 131 contacts were entered into the contact table. There were 24 contacts addressed by star pattern reduced line spacing development. A total of 107 contacts were deemed insignificant to warrant further investigation. All areas surveyed were track line/swath line plotted to insure complete coverage. Additional information can be found in the Survey Separates.*

F. SOUNDING EQUIPMENT

An Innerspace model 448 depth sounder, S/N 188, was used to collect all echo soundings on this survey. A standard lead line calibrated in meters, S/N 1210, was used during this survey for comparison with the echo sounder. No problems were encountered with any of the sounding equipment.

* DATA FILED WITH ORIGINAL FIELD RECORDS.

G. CORRECTIONS TO ECHO SOUNDINGS

Correctors for the velocity of sound through water were determined from the casts listed in the following table:

Cast No.	Table No.	Deepest * Depth(m)	Applicable DN(s)	Cast Position		Day Taken
1	1	14.2	007-014	32°56'30"N	079°55'30"W	011
2	2	20.2	019	32°55'30"N	079°56'05"W	019
3	3	18.3	033-035	32°54'30"N	079°56'00"W	033
4	4	17.7	040	32°54'36"N	079°55'54"W	040
5	5	18.3	047	32°54'54"N	079°55'54"W	047

*extended depth after processing

The instrument used for determining corrections for the speed of sound through the water column was a Seabird-Seacat velocity profiler, model 19-03, S/N 198671-1477. The manufacturer calibrated this unit on October 23, 1998. Data quality assurance tests were performed after each cast. Program VELOCITY was used for computing the correctors. Corrections were applied to the sounding plot using the HPS REAPPLY program. Copies of the velocity tables and support documentation are in the Survey Separates. *

The lead line for launch 1210 was calibrated using a steel tape on January 6, 1997. No corrections were necessary. A copy of the calibration form is in the Survey Separates.* A static draft of 0.5 meter was applied to the final sounding plot by the HPS REAPPLY program. The draft was measured by subtracting the difference from a punch mark on the side of launch 1210, 0.6 meter above the transducer, to the water surface.

Settlement and squat measurements for launch 1210 were taken on September 23, 1997 (DN: 266). These measurements were conducted in the Cooper River, Charleston, SC using the level method. The data from this test is included in the Survey Separates.* Settlement and squat correctors were applied to the final sounding plot using the HPS REAPPLY program.

Field tide reduction of soundings is based on unverified actual heights from the tides internet site (http://www.opsd.nos.noaa.gov/ftp/pwldata.html) for 866-5530, Charleston, SC. Correctors for three tidal zones on this survey were used as designated by the Project Instructions. The zones were exported to HPS by HPS tools and applied by DPAS tides utilities

All elevations and soundings on this survey are based on MLLW unless otherwise specified.

Approved tide levels were requested from the Chief, Requirements and Engineering Branch, N/CS41, in a letter dated March 5, 1999. A copy is appended to this report. APPROVED TIDES AND ZONES WERE APPLIED DURING OFFICE PROCESSING.

* DATA FILED WITH ORIGINAL FIELD RECORDS.

All tides gauges required for this survey were NGWLMS gauges installed by Atlantic Hydrographic Party and Atlantic Operations Section personnel.

H. CONTROL STATIONS SEE ALSO THE EVALUATION REPORT

The horizontal control datum for this project is the North American Datum (NAD) of 1983. The control reference station used for this survey was the USCG DGPS Charleston beacon (Station ID #808), located at 32°45.45357'N, 079°50.57225'W.

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used for all hydrographic data acquired on this survey. A Starlink DGPS Beacon Receiver (S/N 795) and antenna (S/N 4132) were used as the remote station on launch 1210.

DGPS performance checks were conducted in accordance with FPM 3.4.4 by comparing the DGPS position of the vessel to the position of the following calibration point:

Opening / Closing: Mt. Pleasant Rear Range Lt. 32°45.45357'N 079°50.57225'W

To obtain a performance check, the launch was brought alongside the checkpoint and the easting, northing, number of SVs, HDOP, and time of observation were noted on the echogram. These values were then entered into an Excel spreadsheet which computes the acceptable error margin (based on the HDOP) and also the observed difference between the known and observed position. The table of these comparisons is included in the Survey Separates.* All of the observed differences fell well within the allowable limit.

J. SHORELINE SEE ALSO THE EVALUATION REPORT

There was no photogrammetric source data for this project.

K. CROSSLINES

A total of 12.1 linear nautical miles of crosslines were run. Crossline soundings agree with the main scheme soundings within 0.2 meter. The only exceptions were some 0.3 meter differences caused by weather influence on the tides. The application of smooth tides will create a closer agreement in sounding comparison.

* DATA FILED WITH ORIGINAL FIELD RECORDS

L. JUNCTIONS SEE ALSO THE EVALUATION REPORT

This survey junctions with the following:

Survey No.	Year	Scale	Junction Area
H-10856	1999	1:5,000	Southern edge
H-10858	1999	1:5,000	Northern edge

Junction soundings and soundings from this survey are in close agreement with survey H-10856, with differences of 0.2 meters or less, except where noted in Section "O" of this report. Junction soundings with H-10858 were not available yet, as the survey is currently in progress.

M. COMPARISON WITH PRIOR SURVEYS SEE ALSO THE EVALUATION REPORT

See the Atlantic Hydrographic Branch's "Evaluation Report for H-10857".

N. ITEM INVESTIGATION REPORTS

There was one AWOIS items assigned to H-10857.

AWOIS 7620 – Obstruction 32°55'24.20"N 079°56'01.00"W Chart: 11527
CHART: 11524

This feature is charted as submerged piles from CL682/79--COE, permit for the US Navy. The plans described two dolphins that rise 12 feet above MLW. On BP122049/81--NOS air photo revision, the dolphins were not seen and revised by the compiler to submerged. This geographic region was covered with 200% side scan sonar. The result of this search was negative. The hydrographer recommends removing the submerged piles from the chart. CONCUR

O. COMPARISON WITH THE CHART SEE ALSO THE EVALUATION REPORT

Comparison was made with the following charts:

Chart No.	Source Edition	Raster Edition	Edition Date
11524	43rd ED	03	Nov. 1, 1997
11527	15 th ED	02	Aug. 9, 1997

Three features, discussed in this section, were included in a Danger to Navigation letter dated March 1, 1999 and sent to the USCG Seventh District. A copy of the letter in included in the Descriptive Report Appendices.

An uncharted area of debris should be charted as an obstruction with a 60-meter radius foul limit at 32°54'50.16"N, 079°55'35.08"W. The least depth is ~~13~~ 18 feet at MLLW. This feature was included in the danger letter submitted to the USCG. This was the former site of Cooper River Forward Range B. CONCUR WITH CLARIFICATION - CHART 10 OBSTN WITH DANGER CURVE. REVISE CHART 11524 - ADD TO CHART 11527

An uncharted dolphin was found at 32°54'37.62"N, 079°55'38.65"W. This feature was established by the USCG and is a mooring assist for servicing Forward Range "A". CONCUR CHART 0 DOL

There are two uncharted signs at 32°54'38.94"N, 079°56'54.73"W, and 32°54'19.51"N, 079°56'38.74"W. These are restricted area signs marking the southern limits of the US Navy weapons station. CONCUR - CHART TWO SYMBOLS Δ SIGN

In general the soundings from this survey do not agree with the charted soundings. The majority of survey soundings are two to five feet deeper. Survey soundings were acquired at forty-meter line spacing. All survey soundings from H-10857 should supersede those currently charted in the common area. CONCUR

- The ruins charted at 32°56'12.45"N. 079°56'12.51"W, still exist. They have a least depth of ~~39~~ 43 feet and lie alongside a Navy pier. The ruins should be charted as submerged. CONCUR WITH CLARIFICATION - REVISE RUINS TO SUBM RUINS
- The US Navy Tender charted at 32°55'19.02"N, 079°55'58.43"W, has been removed. All tenders have been moved to the Savannah River, SC. This feature should be removed from the chart. CONCUR - DELETE TENDER SYMBOL AND NOTATION
- The US Navy Tender charted at 32°55'01.55"N, 079°55'40.18"W, has been removed. All tenders have been moved to the Savannah River, SC. This feature should be removed from the chart. CONCUR - NOT SHOWN ON CHART 11524 44TH ED.
- The pile charted at 32°55'14.20"N, 079°55'57.77"W, no longer exists and was disproved by side scan sonar. It should be deleted from the chart. CONCUR - NOT SHOWN ON CHART 11524 44TH ED.
- The pile charted at 32°55'16.60"N, 079°55'53.71"W, no longer exists and was disproved by side scan sonar. CONCUR - NOT SHOWN ON CHART 11524 44TH ED.
- The charted Drydock Platform with quick red light has been removed. The submerged obstruction remains have a least depth of ~~31~~ 28 feet at 32°55'01.31"N, 079°55'41.32"W. This feature was included in the danger letter submitted to the USCG. CONCUR WITH CLARIFICATION: REVISE CHART 11524 :31: TO :28: - ADD :28: TO CHART 11527
- The six-foot shoal charted at 32°54'37.92"N, 079°55'42.48"W, was found to have a least depth of ~~11~~ 7 feet. CONCUR OBSTN GSV 3/7/00

- The Front Range "B" charted at 32°54'26.58"N, 079°56'07.48"W, has been moved to a new location closer to shore. A submerged obstruction was located at 32°54'26.66"N, 079°56'07.16"W, where this range was charted. The least depth is ~~9~~ 7 foot at MLLW. This feature was included in the danger letter submitted to the USCG. CONCUR WITH CLARIFICATION: REVISE CHART 11524 :9: TO :7: - ADD :7: TO CHART 11527

SEE ALSO SECTION O. OF THE EVALUATION REPORT

- The mooring buoys charted at 32°54'43.37"N, 079°56'27.19"W, and at 32°54'37.54"N, 079°56'22.98"W, no longer exist and any remains were disproved by side scan sonar. These symbols should be removed from the chart. CONCUR There are eight mooring buoys in close proximity to the charted moorings mentioned above, which are still in use. The positions are:

  Mooring buoy at 32°54'30.60"N, 079°56'53.40"W *
  Mooring buoy at 32°54'31.97"N, 079°56'43.94"W *
  Mooring buoy at 32°54'32.15"N, 079°56'39.41"W *
  Mooring buoy at 32°54'32.83"N, 079°56'33.08"W *
  Mooring buoy at 32°54'36.57"N, 079°56'28.61"W *
  Mooring buoy at 32°54'37.83"N, 079°56'36.04"W *
  Mooring buoy at 32°54'36.94"N, 079°56'43.00"W *
  Mooring buoy at 32°54'35.25"N, 079°56'50.00"W *
  * CHART AS SHOWN ON PRESENT SURVEY.

- The 11 foot sounding charted at 32°54'38.16"N, 079°56'44.48"W, was found to be ~~11~~ 12 foot. CONCUR

- The row of piles charted at 32°54'15.00"N, 079°56'48.27"W, were found as charted. CONCUR RETAIN AS CHARTED
- The obstruction PA charted at 32°54'09.45"N, 079°57'31.26"W, no longer exists and was disproved by side scan sonar. It should be deleted from the chart. CONCUR

P. ADEQUACY OF SURVEY SEE ALSO THE EVALUATION REPORT

This is a complete basic hydrographic survey of the area required by the Project Instructions and is adequate to supersede all prior surveys within the common area.

Q. AIDS TO NAVIGATION SEE ALSO THE EVALUATION REPORT

There are ~~18~~ 9 non-floating aids and ~~two~~ 11 floating aids to navigation, maintained by the U.S. Coast Guard, that lie within the survey area. Positions of these aids were determined by DGPS during hydrographic operations and are included in the hydrographic records.

The positions for the following five non-floating aids disagree with the charted positions:

Name	LL No.	Survey Position	Bearing/Distance (from charted location)
Front Range Lt. E	LL # 3055	32°56'07.10"N, 079°55'50.12"W	201° / 21 meters
Front Range Lt. C	LL # 2995	32°56'00.88"N, 079°56'22.02"W	146° / 40 meters
Fl Red Lt. # 72	LL # 3020	32°55'50.49"N, 079°56'08.63"W	204° / 19 meters

Fl Red Lt. # 70	LL # 3005	32°55'13.00"N, 079°55'42.98"W	172° / 76 meters
Fl Green Lt. # 69	LL # 2985	32°54'54.55"N, 079°55'52.86"W	129° / 48 meters

The Front Range "B" has been moved to a new location at 32°54'24.47"N, 079°56'08.70"W. This position is near the charted rear range, which has also been moved, but was not positioned due to being outside the survey limits.

The charted Daybeacon "R70A" has been replaced by a red nun buoy "R70A" (LL # 3010.)

- There are no overhead power cables within the limits of H-10857.
- There is one charted submerged pipeline and cable area at 32°55'00"N, 079°55'48"W, which should remain as charted. CONCUR
- All currently charted ranges serve their intended purpose.

R. STATISTICS

Description	Quantity
Total Number of Positions	3447
Total Linear Nautical Miles of Hydrography	4.5
Total Linear Nautical Miles of Cross Lines	12.1
Total Linear Nautical Miles of (SSS) Hydrography	58.1
Square Nautical Completed	2.0
Days of Production	10
Detached Positions	46
Bottom Samples	15
Velocity Casts	5

S. MISCELLANEOUS SEE ALSO THE EVALUATION REPORT

Bottom samples were taken and submitted as directed in Section 6.7 of the Project Instructions.

Secchi disk observations were not acquired on this survey due to the continually poor water clarity. The flood and ebb tidal currents were visually observed at two to three knots within the survey limits.

T. RECOMMENDATIONS

No additional fieldwork was identified after field processing was completed. Specific recommendations are made in section N and O of this report.

U. REFERRAL TO REPORTS

There are no reports referred to that are not submitted with this report.

Submitted by:

David B. Elliott
Atlantic Hydrographic Party

32°47'04.84831
079°53'40.49917

E. 15507.442
N. 14935.660

CJ0887 DESIGNATION - MT PLEASANT RANGE REAR MT
CJ0887 PID - CJ0887
CJ0887 STATE/COUNTY - SC/CHARLESTON
CJ0887 USGS QUAD - CHARLESTON (1979)
CJ0887
CJ0887 *CURRENT SURVEY CONTROL
CJ0887

CJ0887* NAD 83(1986)- 32 47 04.84831(N) 079 53 40.49917(W) ADJUSTED
CJ0887* NAVD 88 -
CJ0887

CJ0887 LAPLACE CORR- -2.87 (seconds DEFLEC96
CJ0887 GEOID HEIGHT- -33.19 (meters) GEOID96
CJ0887
CJ0887 HORZ ORDER - THIRD
CJ0887
CJ0887.The North Carolina/South Carolina HARN[illegible]ave been completed but,
CJ0887.due to contractual restrictions, coordin[illegible]es for these stations
CJ0887.will NOT be published in the near future. In the interim, the
CJ0887.published coordinates in North and South Carolina will not be
CJ0887.consistent with the Continuously Operati[illegible]g Reference Stations
CJ0387.(CORS). The HARN coordinates for these [illegible]stations are available
CJ0887.upon request. Contact Gary Thompson(919-[illegible]33-3836), or Sid
CJ0887.Miller(803-896-7700).
CJ0887.
CJ0887.In addition, the published North and South Carolina positions
CJ0887.(NAD 83 (1986)) are NOT consistent with those determined in
CJ0887.adjacent state readjustments. The discontinuity between stations
CJ0887.located in North or South Carolina and those in adjacent states
CJ0837.which have been adjusted to the HARN may be as much as 5
CJ0887.decimeters. This will result in a significant loss of accuracy
CJ0887.over lines crossing such state borders.
CJ0887.
CJ0887
CJ0887.The horizontal coordinates were established by classical geodetic methods
CJ0887.and adjusted by the National Geodetic Survey in July 1986.
CJ0887
CJ0887
CJ0887.The Laplace correction was computed from DEFLEC96 derived deflections.
CJ0887
CJ0887.The geoid height was determined by GEOID96.
CJ0987

CJ0887;		North	East	Units	Scale	Converg.
CJ0887;SPC SC	-	347,964.56	2,339,710.8[illegible]	iFT	.99991188	+0 36 46.2
CJ0887;SPC SC	-	106,059.599	713,143.9[illegible]	MT	.99991188	+0 36 46.2
CJ0887;UTM 17	-	3,627,957.724	603,516.2[illegible]	MT	.99973213	+0 35 55.0

CJ0887
CJ0887 SUPERSEDED SURVEY CONTROL
CJ0887
CJ0887 NAD 27 - 32 47 04.21567(N) 079 53 41.1[illegible]421(W)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE, Office of Coast Survey
Atlantic Hydrographic Party
439 West York Street
Norfolk, VA 23510-1114

March 1, 1999

Commander (oan)
U.S. Coast Guard District Seven
Brickell Plaza Federal Bldg.
909 SE First Ave.
Miami, Florida 33131-3050

Dear Sir:

While conducting a hydrographic survey of the Cooper River, South Carolina (registry H-10857, project OPR-G301-AHP) an uncharted submerged obstruction and two charted visible features which are now submerged obstructions, were found as listed below. I recommend this information be included in the Local Notice to Mariners. The positions are based on NAD 83 datum and the soundings have been reduced to Mean Lower Low Water (MLLW) using unverified actual tides. These features were located using Differential GPS.

This information affects the following chart:

CHART NO.	EDITION	DATE
11524	42nd	Nov 11/96
11527	15th	Aug 09/97

DESCRIPTION	NAD 83 POSITION	DEPTH (ft)
Submerged Obstruction (a)	32°55'01.31"N 079°55'41.32"W	31
Submerged Obstruction	32°54'50.16"N 079°55'35.08"W	13
Submerged Obstruction (b)	32°54'26.66"N 079°56'07.16"W	9

(a) - Charted Navy Platform no longer exists at this location
(b) - Charted Range B Front Light no longer exists at this location

This is advance information which is subject to office review. A chart section showing the location of this danger is attached. Questions concerning this report should be directed to LCDR Andrew L. Beaver, Chief of the Atlantic Hydrographic Branch at (757) 441-6746.

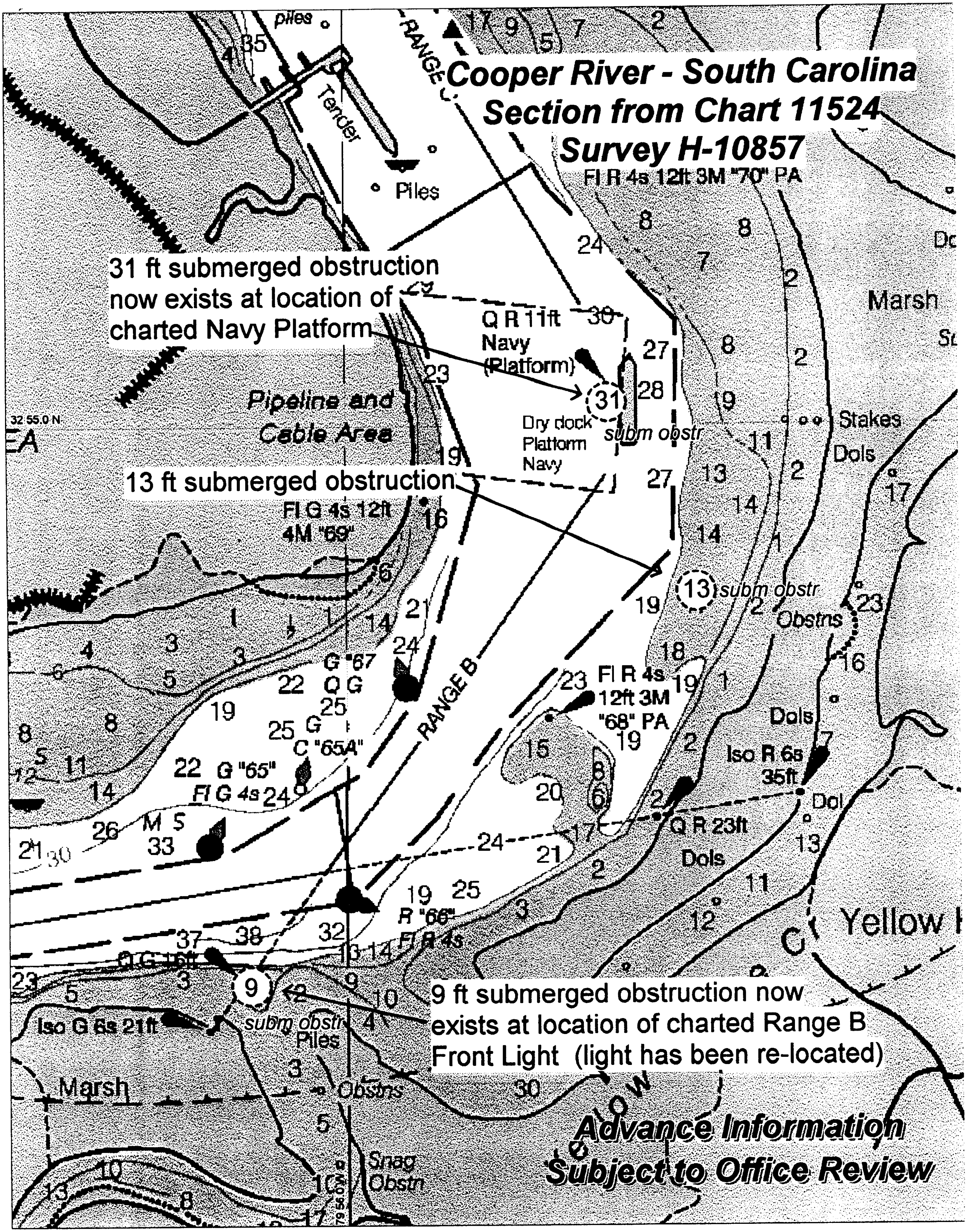
Sincerely,

Brian A. Link
Chief, Atlantic Hydrographic Party

Attachment

cc: N/CS26
N/CS33
NIMA/NMD/STD44
Charleston Branch Pilots Assoc.

USCG issued → LNM # 10875


Cooper River - South Carolina
Section from Chart 11524
Survey H-10857
31 ft submerged obstruction now exists at location of charted Navy Platform
13 ft submerged obstruction
9 ft submerged obstruction now exists at location of charted Range B Front Light (light has been re-located)
Advance Information
Subject to Office Review
Fl R 4s 12ft 3M "70" PA
Q R 11ft Navy (Platform)
Dry dock Platform Navy
subm obstr
Pipeline and Cable Area
Fl G 4s 12ft 4M "69"
G "67" Q G
G C "65A"
G "65" Fl G 4s
RANGE B
Fl R 4s 12ft 3M "68" PA
Iso R 6s 35ft
Q R 23ft
R "66" Fl R 4s
Q G 16ft
Iso G 6s 21ft
Piles
Tender
Marsh
Stakes
Dols
Dol
Obstns
Snag Obstn
Yellow

APPROVAL SHEET
Basic Hydrographic Survey
OPR-G301-AHP
AHP-5-4-98
H-10857
1999

This basic hydrographic survey was completed in accordance with the Project Instructions for OPR-G301-AHP, the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual. All reports, records, and survey plots were reviewed by Mr. David B. Elliott, Launch-hydrographer-in-charge of this project. The Descriptive Report was also reviewed by the Chief, AHP. The chief of party did not directly supervise any part of this survey.

This survey is a complete basic hydrographic survey for the area described in Section B of this report.

Brian A. Link
Chief, Atlantic Hydrographic Party

David B. Elliott
Surveying Technician, AHP

ADDENDUM for DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY, H-10857
OPR-G301-AHP
FIELD NO. AHP-5-1-99
SCALE: 1: 5,000
1999
ATLANTIC HYDROGRAPHIC PARTY TWO
CHIEF OF PARTY: Brian A. Link

A. PROJECT

This survey was conducted according to Hydrographic Project Instructions OPR-G301-AHP, Charleston Harbor, South Carolina and adjoining waterways, dated March 19, 1997, Change No.1 dated April 9, 1998, and Change No. 2 dated August 18, 1998.

The purpose of this Addendum to H-10857 is to provide additional cross lines and sounding development on dangers to navigation, as a check of the tidal zoning correctors used for the previously submitted data. An additional tide gage was added at Army Depot, SC (866-4662) in the Cooper River. Verifiers at the Atlantic Hydrographic Branch will make the sounding comparisons after a second smooth tide request has been received.

B. AREA SURVEYED

The area surveyed as specified by the Project Instructions is defined as Sheet "G." The approximate survey limits are:

North - 32°57'00"N
South - 32°54'00"N
East - 079°55'20"W
West - 079°57'42"W

This additional work was conducted on June 7, 1999 (DN: 158).

C. SURVEY VESSEL

NOAA launch 1210, a 27-foot SeaArk, was used to collect all survey data. There were no unusual vessel configurations or problems encountered with the vessel.

F. SOUNDING EQUIPMENT

An Innerspace model 448 depth sounder, S/N 188, was used to collect all echo soundings on this survey. A standard lead line calibrated in meters, S/N 1210, was used during this survey for comparison with the echo sounder. No problems were encountered with any of the sounding equipment.

G. CORRECTIONS TO ECHO SOUNDINGS

Correctors for the velocity of sound through water were determined from the casts listed in the following table:

Cast No.	Table No.	Deepest * Depth(m)	Applicable DN(s)	Cast Position	Day Taken
6	6	17.2	158	32°56'48" N 079°55'36"W	158

*extended depth after processing

The instrument used for determining corrections for the speed of sound through the water column was a Seabird-Seacat velocity profiler, model 19-03, S/N 198671-1477. The manufacturer calibrated this unit on October 23, 1998. Data quality assurance tests were performed after each cast. Program VELOCITY was used for computing the correctors. Corrections were applied to the sounding plot using the HPS REAPPLY program. A copy of the velocity table is in the package submitted with this Addendum's data. DATA FILED WITH ORIGINAL FIELD RECORDS

Field tide reduction of soundings is based on unverified actual heights from the tides internet site (http://www.opsd.nos.noaa.gov/ftp/pwldata.html) for 866-5530, Charleston, SC. Correctors for three tidal zones on this survey were used as designated by the Project Instructions. The zones were exported to HPS by HPS Tools and applied by DPAS tides utilities

All elevations and soundings on this survey are based on MLLW unless otherwise specified.

A second approved tide levels request was sent to the Chief, Requirements and Engineering Branch, N/CS41, in a letter dated June 18, 1999. A copy is appended to this addendum. APPROVED TIDES AND ZONES WERE APPLIED DURING OFFICE PROCESSING.

All tide gauges required for this survey were NGWLMS gauges installed by Atlantic Hydrographic Party and Atlantic Operations Section personnel.

K. CROSSLINES

An additional 7.5 linear nautical miles of cross lines were run for comparison to previously collected data. Cross line soundings agree with the previously acquired data within 0.3 meter.

N. Item Investigation Data

The three dangers to navigation originally submitted on H-10857 were re-developed with single beam hydrography for comparison. No changes to the information provided in the danger to navigation letter sent to the USCG Seventh District, dated March 1, 1999, were noted.

Submitted by:

David B. Elliott
Atlantic Hydrographic Party

APPROVAL SHEET
Addendum to Basic Hydrographic Survey
OPR-G301-AHP
AHP-5-4-98
H-10857
1999

This additional field work was completed in accordance with the Project Instructions for OPR-G301-AHP, the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual. All reports, records, and survey plots were reviewed by Mr. David B. Elliott, Launch-hydrographer-in-charge of this project. The Descriptive Report was also reviewed by the Chief, AHP. The chief of party did not directly supervise any part of this survey.

This additional field work is adequate to satisfy the additional requirements for this basic hydrographic survey for the area described in Section B of this report.

Brian A. Link
Chief, Atlantic Hydrographic Party

David B. Elliott
Surveying Technician, AHP

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: June 10, 1999

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G301-AHP
HYDROGRAPHIC SHEET: H-10857

LOCALITY: Charleston, SC - Copper River
Goose Creek to Red Bank Landing

TIME PERIOD: January 7, 1999 - February 16, 1999

TIDE STATION USED: 866-5530 Charleston, SC
Lat. 32° 46.9'N Lon. 79° 55.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.664 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: CH5, CH6, CH7, CH8, CH11 & CH13

Refer to attachments for zoning information.

Note 1: A subordinate tide gauge was required at either General Dynamics (866-4022) or Army Depot (866-4662) to provide tide reducers for areas of the Cooper River where river influences may preclude provision of tide reducers, within required accuracy standards, by applying zoning correctors to the data from the control station at Charleston (866-5530). During the period hydrography was conducted for this sheet, however, the gauge at General Dynamics had already been removed and the gauge at Army Depot had not yet been installed. Therefore, tide reducers are provided for this sheet (H-10857) based on data from the Charleston control station with appropriate zoning correctors. Considering the possibility of the inadequacy of these data for the area covered on this sheet, they are considered preliminary, contingent upon the verification of survey adequacy.

Error estimates of the data using zoning correctors applied to Charleston were made by comparing zoned data with observed data from Army Depot for a six month period in 1987. This analysis shows that the estimated error contribution to the total survey error budget using the tidal zoning methodology is 0.37m (95% confidence level). Given the relatively shallow depths, this error may be problematic. Due to this uncertainty, it was recommended that subsequent reconnaissance hydrography be conducted after re-installation of the Army Depot gauge. The two surveys, one using direct observations from Army Depot and one using tidal zoning off of Charleston, should be compared to provide a general assessment of whether the soundings corrected with tidal zoning match those corrected using direct observations. This assessment would provide quantitative adequacy levels only for the survey area of the reconnaissance survey, however, the results could be used to provide qualitative adequacy levels for the entire survey. The comparison results, along with the error analysis of the zoning methodology provided above, should then be used in a final error budget analysis for the survey area in question.

Note 2: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Thomas W. Meier 6/10/99

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 10, 1999

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-G301-AHP
HYDROGRAPHIC SHEET: H-10857

LOCALITY: Charleston, SC - Cooper River
Goose Creek to Red Bank Landing

TIME PERIOD: June 7, 1999

TIDE STATION USED: 866-4662 Army Depot, SC
Lat. 32° 54.6'N Lon. 79° 57.0'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.722 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: CH32 & CH38.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

Note 2: For this survey, zoning correctors for Sheet H-10857 have been provided referencing Army Depot (866-4662). Error analyses using tide data recently collected at Army Depot show that zoning correctors referencing Charleston (866-5530), provided for the previous survey of Sheet H-10857 (January 7, 1999 through February 16, 1999), fall within the accepted error budget for Hydrographic surveying. See Note 1 on the Tide Note dated June 10, 1999 for Sheet H-10857.

Thomas N. Moss 11/10/99

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10857

Name on Survey	A ON CHART NO. 11524, 11527	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
CLOUTER CREEK	X		X							1
COOPER RIVER	X		X							2
FLAGG CREEK	X		X							3
GOOSE CREEK	X		X							4
PORT TERMINAL	X		X							5
RED BANK LANDING	X		X							6
SNOW POINT	X		X							7
SOUTH CAROLINA (title)	X		X							8
WOODS POINT	X		X							9
YELLOW HOUSE CREEK	X		X							10
YELLOW HOUSE LANDING	X		X							11
					[redacted]					12
										13
					Dennis J. Romalewski					14
					Chief Cartographer MAY 5 1999					15
										16
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										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REFERENCE NO.

N/CS33-11-00

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*

ORDINARY MAIL	AIR MAIL
REGISTERED MAIL	X EXPRESS
GBL *(Give number)*	

LETTER TRANSMITTING DATA

TO:

Chief, Data Control Group, N/CS3x1
NOAA/National Ocean Service
Station 6815, SSMC3
1315 East-West Highway
Silver Spring, MD 20910-3282

DATE FORWARDED

3-2-0

NUMBER OF PACKAGES

One Tube

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H10857

South Carolina, Cooper River, Goose Creek To Red Bank Landing

One Tube Containing The Following:

1 Smooth Sheet For Survey H10857
1 Original Descriptive Report
1Drawing History Form (NOAA Form #76-71) For NOS Chart 11524
1 Drawing History Form (NOAA Form #76-71) For NOS Chart 11527
1 Record Of Application To Chart Form (NOAA Form #75-96) For Survey H10857
1 H-Drawing For NOS Chart 11524
1 H-Drawing For NOS Chart 11527
1 Composite Drawing For NOS Chart 11524
1 Composite Drawing For NOS Chart 11527

FROM: *(Signature)* Richard Blevins

Richard Blevins

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Branch
N/CS33
439 West York Street
Norfolk, VA 23510-1114

NOAA FORM 61-29 SUPERSEDES FORM C & GS 413 WHICH MAY BE USED

03/03/2000

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10857

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	3347
NUMBER OF SOUNDINGS	3347

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	8.0	04/16/1999
VERIFICATION OF FIELD DATA	53.0	07/27/1999
QUALITY CONTROL CHECKS	0.0	
EVALUATION AND ANALYSIS	6.0	
FINAL INSPECTION	29.0	11/19/1999
COMPILATION	156.5	02/24/2000
TOTAL TIME	252.5	

ATLANTIC HYDROGRAPHIC BRANCH APPROVAL 12/01/1999

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10857 (1999)

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

Additional field work was conducted on items noted by the hydrographer and Atlantic Hydrographic Branch (AHB) personnel. The addendum to the Descriptive Report describes the work.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

Hydrographic Processing System
NADCON, version 2.10
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using a Hewlett Packard DesignJet 2500CP plotter.

H. CONTROL STATIONS

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 0.625 seconds (19.253 meters or 3.85 mm at the scale of the survey) north in latitude, and 0.694 seconds (18.030 meters or 3.61 mm at the scale of the survey) east in longitude.

J. SHORELINE

Brown shoreline originates with National Ocean Service (NOS) charts 11527, (15th Edition, Aug. 9/97)and 11524, (44th Edition, Sep. 11/99) and is for orientation purposes only.

L. JUNCTIONS

H10856 (1998) to the North
H10858 (1999) to the South

Standard junctions were effected between the present survey and survey H10856 (1998) to the north and survey H10858 (1999) to the south.

M. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

O. COMPARISON WITH CHART 11527 (15th Edition, Aug. 9/97) 11524 (44th Edition, Sep. 11/99)

Hydrography

The charted hydrography originates with prior surveys and other miscellaneous sources. An adequate comparison is made in sections N. and O. of the Descriptive Report. Attention is directed to the following:

O.1. During office processing of this survey, one amended Danger to Navigation Report containing three items was submitted to Commander (oan), Seventh Coast Guard District, Brickell Plaza Federal Building, 909 SE First Avenue, Miami, Florida for inclusion in the local Notice to Mariners and to the Marine Chart Division, Silver Spring, Maryland. A copy of the report is appended to the Descriptive Report.

The three items listed in the amended Danger to Navigation Report are to be revised on chart 11524 and applied to chart 11527.

1) A charted aid to navigation, Cooper River Light 70, Light List Number 3005, is presently charted with the notation PA on chart 11527. This aid to navigation was located by the present survey in latitude 32°55'13.00"N, Longitude 079°55'42.98"W. It is recommended that Cooper River Light 70 be charted as shown on the present survey and that the notation PA be deleted from chart 11527. This light is correctly charted on the latest edition of chart 11524.

2) On chart 11527, day beacon "70A" PA, Light List Number 3010, has been replaced by red nun buoy "70A". The new buoy was positioned in latitude 32°55'23.614"N, Longitude 079°55'52.420"W, by the present survey. It is recommend that the charted day beacon, "70A" PA, be removed from chart 11527 and that the red nun buoy, "70A", be charted as shown on the present survey on charts 11524 and 11527 unless other information indicates otherwise.

3) An uncharted dangerous obstruction with a least depth of 37 ft (11^3 m) was located during office processing in Latitude 32°55'15.87"N, Longitude 079°55'54.82"W. It is recommended that an obstruction with a least depth of 37 ft (11^3 m) and a danger curve be charted as shown on the present survey. The mooring buoy charted near this obstruction in Latitude 32°55'15.88"N, Longitude 079°55'55.69"W is considered disproved and should be removed from the chart.

4) A charted 9 foot sounding surrounded by a danger curve with the notation Obstns is located in Latitude 32°54'26.66"N, Longitude 079°56'07.16"W on chart 11524 (44th Edition, Sep. 11/99). This feature originated with the Danger to Navigation Report submitted by the hydrographer on March 1, 1999. During office processing, it was determined that there was only one obstruction located at this position with a least depth of 7 feet. It is recommended that the notation Obstns be revised to Obstn and that the 9 foot sounding surrounded by a danger curve be revised to a 7 foot sounding surrounded by a danger curve on chart 11524. It is also recommended that a 7 foot sounding surrounded by a danger curve be charted in Latitude 32°54'26.66"N, Longitude 079°56'07.16"W on chart 11527 with the notation Obstn.

The present survey is adequate to supersede the charted hydrography within the common area.

CONTROLLING DEPTHS

1) A conflict exists with the charted controlling depths in the vicinity of Latitude 32°56'04"N, Longitude 079°56'03"W, on Range "D" of the Cooper River. The present survey shows depths from 29 to 30 feet with a controlling depth of 35 feet.

2) A conflict exists with the charted controlling depths, in the vicinity of Latitude 32°54'24.00"N, Longitude

079°56'50.30"W, on the Ordnance Reach Turning Basin of the Cooper River. The present survey shows depths from 38 to 39 feet with a controlling depth of 40 feet.

P. ADEQUACY OF SURVEY

This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.

Q. AIDS TO NAVIGATION

Nine fixed aids and eleven floating aids were located by the field unit and are shown on the present survey. These aids appear adequate to serve their intended purpose.

S. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division, Silver Spring, Maryland.

The following NOS Charts were used for compilation of the present survey:

11524 (44th Edition, Sept. 11/99)
11527 (15th Edition, Aug. 9/97)

Robert Snow

Robert Snow
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

November 22, 1999

Commander (oan)
Seventh U.S. Coast Guard District
Brickell Plaza Bldg.
909 SE First Avenue
Miami, Florida 33131-3050

Dear Sir,

The following items were previously reported as dangers to navigation by NOAA Atlantic Hydrographic Field Party Two on March 1, 1999 during hydrographic survey operations in the Cooper River, near Charleston, South Carolina, (project OPR-G301-AHP-99, registry number H10857). These items were located using Differential GPS and are based on the NAD 83 datum. The soundings have been reduced to Mean Lower Lower Water (MLLW) using approved tides. During office processing it was found that the originally reported depths, which were computed using predicted tides, where deeper then the office verified depths. Therefore, a revision to these depths was required. The revised depths are shown below:

REPORT OF DANGER TO NAVIGATION

Affected Nautical Charts:

Chart Number	Edition No.	Date	Datum	Scale
11524	44	11 SEP 99	NAD 83	1:20,000
11527	15	12 AUG 97	NAD 83	1:20,000

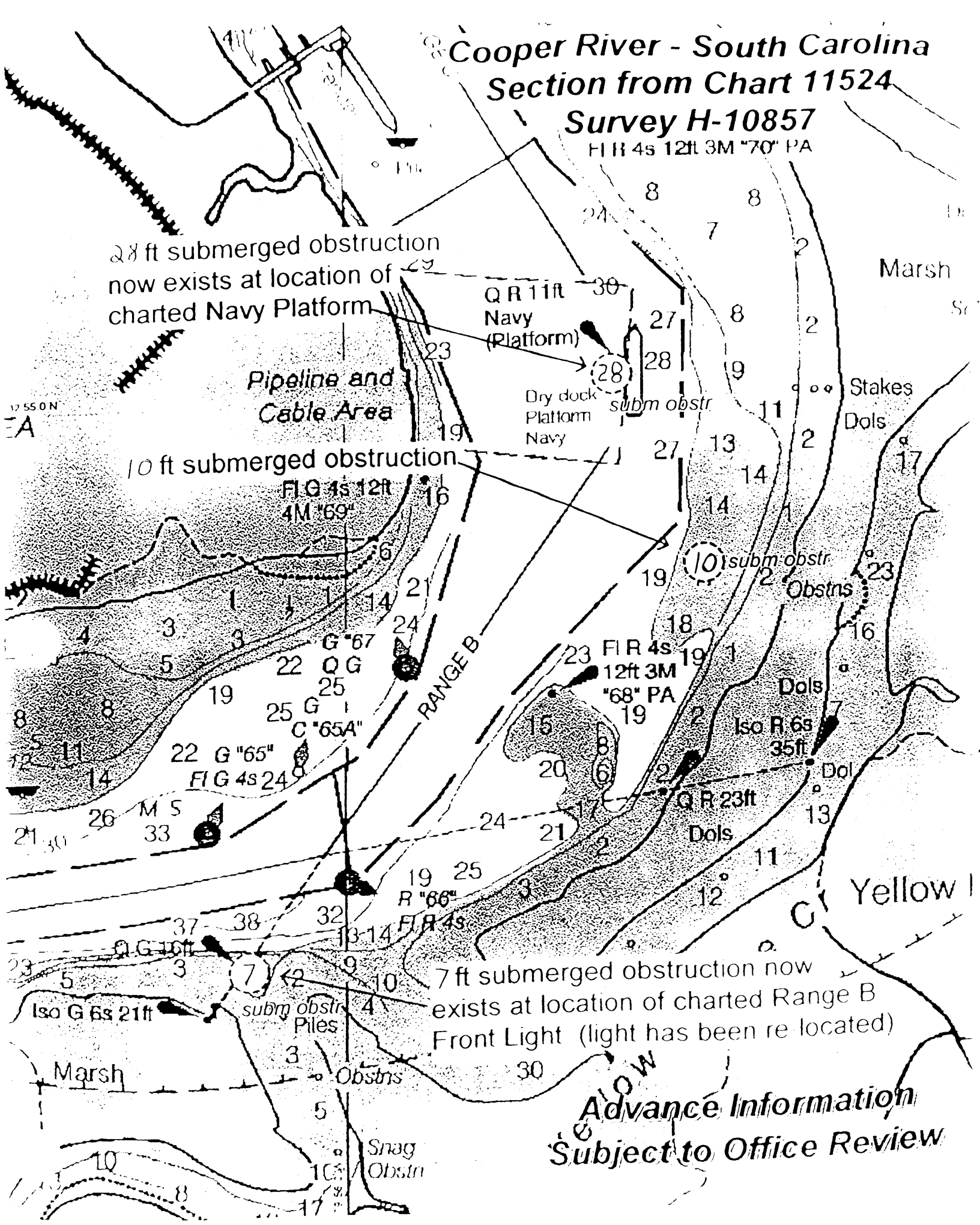
Description	NAD 83 Position	Depth (ft) MLLW
Submerged Obstruction	32°55'01.31"N 079°55'41.32"W	28
Submerged Obstruction	32°54'50.16"N 079°55'35.08"W	10
Submerged Obstruction	32°54'26.66"N 079°56'07.16"W	7

The attached chartlet depicts the items addressed in this letter.

Questions concerning this report should be directed to the Atlantic Hydrographic Branch by calling 757-441-6746.

Sincerely,

Andrew L. Beaver, LCDR, NOAA
Chief, Atlantic Hydrographic Branch


Cooper River - South Carolina
Section from Chart 11524
Survey H-10857
Fl R 4s 12ft 3M "70" PA
28 ft submerged obstruction now exists at location of charted Navy Platform
Q R 11ft
Navy
(Platform)
Pipeline and Cable Area
Dry dock Platform Navy
subm obstr
Stakes
Dols
10 ft submerged obstruction
Fl G 4s 12ft 4M "69"
10 subm obstr
Obstns
RANGE B
G "67"
Q G
C "65A"
Fl R 4s 12ft 3M "68" PA
Dols
Iso R 6s 35ft
Dol
Q R 23ft
Dols
22 G "65"
Fl G 4s
M S
R "66"
Fl R 4s
Yellow
Q G 10ft
Iso G 6s 21ft
subm obstr
Piles
7 ft submerged obstruction now exists at location of charted Range B Front Light (light has been re located)
Marsh
Obstns
Snag
Obstn
Advance Information
Subject to Office Review

APPROVAL SHEET
H10857

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Richard Blevins Date: 11/30/99

Richard Blevins
Cartographer
Atlantic Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Andrew L. Beaver Date: 12/3/99

Andrew L. Beaver
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: Samuel P. De Bow, Jr. Date: March 29, 2000

Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10857

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
11524	12/14/99	Richard Blevins	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No.
11527	12/10/99	Richard Blevins	Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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